

REMARKS

The Examiner objected to the title of invention as not being descriptive. In response, Applicant amended the title to “Electrostatic Actuator Including Stable Electrode Column and Wall”, and requests withdrawal of the objection on this basis.

Claims 1-6 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Dyck et al. (U.S. Patent No. 6,393,913), in view of Werner (U.S. Patent No. 6,133,059). In response, Applicant amended claim 1 to recite that the first and second stable electrode columns are fixed to the basement plane and coupled to respective ends of the first and second stable electrode walls, and respectfully traverse.

Dyck is directed to microelectromechanical dual-mass resonator structure. Dyck discloses a plurality of stationary electrodes 26, as shown in FIGs. 1 and 5. As illustrated in FIGs. 1, 4F and 7 of Dyck, the stationary electrodes 26 are formed into plate-like shapes. Applicant does not believe that Dyck discloses or suggests first and second stable electrode columns that are fixed to the basement plane and coupled to respective ends of the first and second stable electrode walls, as recited in amended claim 1.

Werner is directed to an integrated micromechanical sensor device and a process for producing the device. Werner discloses fixed electrodes FE2, FE3, FE1i, FE12, and FE13, as shown in FIGs. 4a and 5a. The fixed electrodes FE10, FE13 and FE1i are electrically connected to each other as shown in FIG. 6. Applicant does not believe that Werner discloses or suggests first and second stable electrode columns that are fixed to the basement plane and coupled to respective ends of the first and second stable electrode walls, as recited in amended claim 1.

In contrast, amended claim 1 recites first and second stable electrode columns. The first stable electrode column is fixed to the basement plane and coupled to the end of the first stable

electrode wall. The second stable electrode column is fixed to the basement plane and coupled to the end of the second stable electrode wall. The first stable electrode wall and the first stable electrode column constitute one stable electrode, and the second stable electrode wall and the second stable electrode column constitute another stable electrode. The pair of stable electrodes is exemplified as the first and second stable or fixed electrodes 19a, 19b shown in FIGs. 1 and 2 of the present application. As a result of this structural configuration which forms stable electrodes, each of the electrodes can provide a higher rigidity even if the wall thickness of the first and second stable electrode walls is reduced, unlike the prior art cited references. For these reasons, withdrawal of the rejection on independent claim 1 and its associated dependent claims 2-6 is respectfully requested.

New claims 10-15 are added and provide further features of the present invention. Since these claims depend either directly or indirectly from independent claim 1, these claims are considered allowable for the reasons recited above, and also for the following reasons. The subject matter of the new claims 10 to 15 is fully supported by the description of the present invention on page 8, line 30 to page 10, line 21 of Applicant's specification.

More particularly, new claim 10 defines the first and second stable electrode columns as located in a space between first and second datum planes. The first datum plane is defined to include an outward surface of the first stable electrode wall, and the second datum plane is defined to include an outward surface of the second stable electrode wall. New claim 11 defines the distance between the first and second datum planes as being larger than three times a wall thickness of the movable electrode.

New claim 12 defines the first and second stable electrode columns as being formed as a square prism. The sides of a square cross-section of the prism are set larger than three times the wall thickness of the movable electrode. New claim 13 defines the movable electrode as a frame

member surrounding the first and second stable electrode walls. When the movable electrode has the thickness \underline{W} , each of the first and second stable electrode columns is fixed to the basement plane at a position having an area that is larger than $9W^2$.


New claim 14 defines an insulating film interposed between the basement plane and the first and second stable electrode columns. Claim 15 defines a conductive wiring pattern extending on the basement plane. Finally, new claim 15 defines an electrically conductive piece interposed between the conductive wiring pattern and the first and second stable electrode columns. The electrically conductive piece is surrounded by the insulating film. For these reasons, Applicant earnestly solicits allowance of new claims 10-15.

For all of the foregoing reasons, Applicant submits that this Application is in condition for allowance, which is respectfully requested. The Examiner is invited to contact the undersigned attorney if an interview would expedite prosecution.

Respectfully submitted,

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